



Ice Sheet System Model Installation

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Preliminary Notes

Operating System Requirements:

- Mac OS X
- LINUX 32/64, UNIX
- Windows XP (via Cygwin or equivalent)

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Obtaining ISSM Distribution

Download Instructions:

<http://issm.jpl.nasa.gov/installation/download/>

- Download and install SVN (Apache Subversion)
- Checkout ISSM:
\$ svn -username anon -password anon checkout
<https://issm.ess.uci.edu:80/svn/issm/issm>
- Update ISSM:
\$ svn update

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Environment Variables

Website:

<http://issm.jpl.nasa.gov/installation/installation/>

ISSM needs the following Environment Variables to be set:

- .bashrc

```
#ISSM
export ISSM_TIER=ISSMPATH
export ISSM_ARCH=ARCH
source $ISSM_TIER/etc/environment.sh
```
- .cshrc

```
#ISSM
setenv ISSM_TIER ISSMPATH
setenv ISSM_ARCH ARCH
source $ISSM_TIER/etc/environment.csh
```

ISSMPATH is the path of ISSM main directory

- ex: /home/user1/svn/issm/trunk

ARCH is the system architecture

- ex: linux-gnu-amd64, macosx-gnu,...

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External Packages: Fortran Compiler

A Fortran compiler is required for some of the PETSc packages

- Mac OS X:
Xcode does Not have a Fortran compiler
- Download and install binaries:
<http://gcc.gnu.org/wiki/GFortranBinaries>

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External Packages

Website:

<http://issm.jpl.nasa.gov/installation/installation/>

External Packages to Install: Order Matters!

- mpich2 (Installed first)
- petsc (after mpich2)
- metis
- matlab (only a softlink to the actual matlab directory)
- triangle (after matlab)
- autoconf
- automake (after autoconf)

External Packages are located in the trunk folder
(i.e. `$ cd $ISSM_TIER/externalpackages/`)

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External Packages: Installing

Configuring the External Packages:

- Each external package library has a "configs" directory (sometimes multiple versions of the package are available)
- Each "configs" directory has subdirectories with custom configuration files for a variety of machine types/names

Installation Process:

- Copy the files (configure.sh) corresponding to the machine type/name to the external package directory
- Run ./install.sh

For example: Astrid

```
$ cd $ISSM_TIER/externalpackages/mpich2  
$ cp configs/astrid/* .  
$ ./install.sh
```



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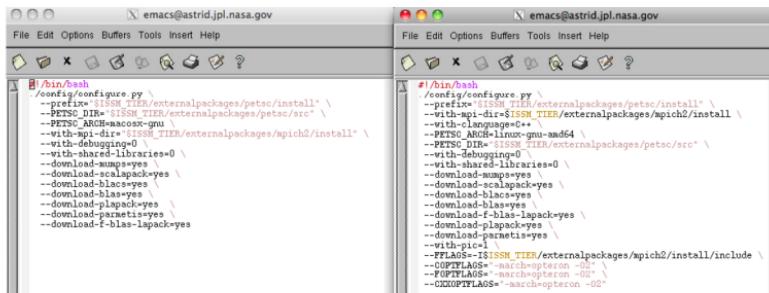
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Example: PETSc

Tweaking the configure.sh file may be necessary for custom installations

- configure.sh files for a Mac OS X and an Astrid (Linux) installation:



```
#!/bin/bash
./configure.py \
--prefix="$ISSM_TIER/externalpackages/petsc/install" \
--PETSC_DIR="$ISSM_TIER/externalpackages/petsc/src" \
--prefix="$ISSM_TIER/externalpackages/petsc/install" \
--with-mpi-dir="$ISSM_TIER/externalpackages/mpich2/install" \
--with-debugging=0 \
--with-shared-libraries=0 \
--download-mumps=yes \
--download-scalapack=yes \
--download-blacs=yes \
--download-fblas-lapack=yes \
--download-parmetis=yes \
--download-f-blas-lapack=yes
```



```
#!/bin/bash
./configure.py \
--prefix="$ISSM_TIER/externalpackages/petsc/install" \
--with-mpi-dir="$ISSM_TIER/externalpackages/mpich2/install" \
--prefix="$ISSM_TIER/externalpackages/petsc/install" \
--PETSC_ARC=linux-gnu-mad64 \
--PETSC_DIR="$ISSM_TIER/externalpackages/petsc/src" \
--with-debugging=0 \
--with-shared-libraries=0 \
--download-mumps=yes \
--download-scalapack=yes \
--download-blacs=yes \
--download-fblas-lapack=yes \
--download-parmetis=yes \
--download-f-blas-lapack=yes \
--download-plapack=yes \
--download-pnetlib=yes \
--with-pic=1 \
--FFLAGS=-I$ISSM_TIER/externalpackages/mpich2/install/include \
--COPTFLAGS="-arch opteron -O2" \
--FOPTFLAGS="-arch opteron -O2" \
--GOPTFLAGS="-arch opteron -O2"
```

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ISSM Configuration

Generate the makefiles needed to compile ISSM:

- ISSM uses autotools to make the source-code packages portable to many Unix-like systems
- Re-configure ISSM:

```
$ cd $ISSM_TIER  
$ ./scripts/automakererun.sh
```

Configure ISSM for your Operating System

- Run one of the configure.sh files corresponding to your machine type (several have been provided)
- For example: \$./configs/astrid/configure.sh

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Custom ISSM Installation

Other platforms may require the user to write their own configure.sh file

- configure.sh files for a Mac OS X and an Astrid (Linux) ISSM installation;

- All of the options available for configuring ISSM can be listed by running `$./configure -help`

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ISSM Compilation

Compile ISSM:

- ISSM can now be compiled:

```
$ cd $ISSM_TIER  
$ make  
$ make install
```

ISSM installation is done!

Compiling Troubleshooting:

- <http://issm.jpl.nasa.gov/installation/compilationtroubleshooting/>

A wide-angle photograph of a desolate, cold landscape, likely an Antarctic or Arctic scene. The foreground is a flat, textured expanse of white snow and ice. In the middle ground, a range of majestic, snow-capped mountains rises against a clear, pale blue sky. The mountains have rugged peaks and some dark, rocky outcrops where the snow has melted. The overall atmosphere is one of serene beauty and vastness.

Thank you!